

# SAFETY INFORMATION NOTICE

**SUBJECT: GENERAL**

**Helicopter External Sling Load Operations (HESLO)**

For the attention of



AIRCRAFT CONCERNED	Version(s)	
	Civil	Military
EC120	B	
AS350	B, BA, BB, B1, B2, B3, D	L1
AS550		A2, C2, C3, U2
AS355	E, F, F1, F2, N, NP	
AS555		AF, AN, SN, UF, UN, AP
EC130	B4, T2	
SA365 / AS365	C, C1, C2, C3, N, N1, N2, N3	F, Fs, Fi, K, K2
AS565		MA, MB, SA, SB, UB, MBe
SA366		GA
EC155	B, B1	
SA330	J	Ba, L, Jm, S1, Sm
SA341	G	B, C, D, E, F, H
SA342	J	L, L1, M, M1, Ma
ALOUETTE II	313B, 3130, 318B, 318C, 3180	
ALOUETTE III	316B, 316C, 3160, 319B	
LAMA	315B	
EC225	LP	
EC725		AP
AS332	C, C1, L, L1, L2	B, B1, F1, M, M1
AS532		A2, U2, AC, AL, SC, UE, UL
EC175	B	
EC339		KUH/Surion
BO105	C (C23, CB, CB-4, CB-5), D (DB, DBS, DB-4, DBS-4, DBS-5), S (CS, CBS, CBS-4, CBS-5), LS A-3	CBS-5 KLH, E-4
MBB-BK117	A-1, A-3, A-4, B-1, B-2, C-1, C-2, C-2e, D-2, D-2m, D-3, D-3m	D-2m, D-3m
EC135	T1, T2, T2+, T3, P1, P2, P2+, P3, EC635 T1, EC635 T2+, EC635 T3, EC635 P2+, EC635 P3, T3H, P3H, EC635 T3H, EC635 P3H	

### **No. 3170-S-00**

Airbus Helicopters releases a new revision of this Safety Information Notice with relevant information regarding Helicopter External Sling Load Operations (HESLO) in line with our constant commitment to improving the safety of helicopter operations.

External sling load operation represents a large part of helicopter activity and is recognized as a difficult mission that requires good pilot skills, adequate ground support and stringent procedures, as the accident risk is higher than for other missions due to its demanding nature (environment, remote places, obstacles, weather conditions, confined areas, different types of load, etc.).

The purpose of this Safety Information Notice is not to instruct pilots and ground teams on external sling load operations, but to share with them some lessons learned from analysis of accidents.

This Safety Information Notice replaces Service Letter No.1727-25-05 published on March 26, 2006.

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Airbus Helicopters strongly advises operators and pilots to carefully read and follow the recommendations below:

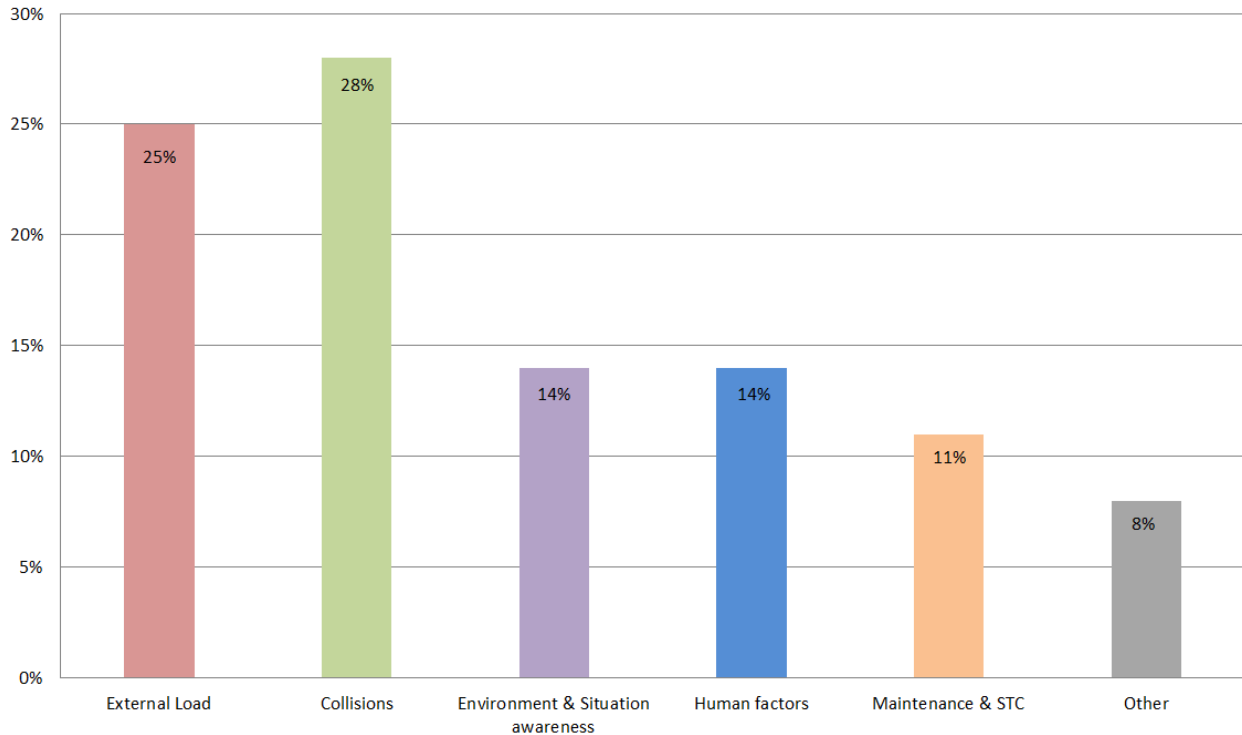
### RECOMMENDATIONS

- Respect limitations published in the Flight Manual including those related to STC in the approved Part of the Flight Manual Supplement.
- Apply the procedure and respect the limitation provided by sling load items manufacturers and providers.
- Strictly adhere to established Standard Operational Procedures (SOP), respect speed limitations with and without the load.
- Be aware that a stainless steel line has not the same behavior in flight than a textile line, regardless of whether it is a short or a long line.
- Each unloaded line is a potential hazard for the operation. Experience has shown that unloaded lines should be ballasted at the bottom of the line. The ballast at the bottom of the line must be so heavy, that the unloaded line cannot, according to flight limits and regulations, endanger the helicopter or operation. The suitable minimum weight for the line depends on the area of use, the range of uses and the type of line used. We recommend that the operator flies and determines the ideal weight through experience and by testing the behavior of the line at the permissible speeds / sink rates.
- Ribbons and ropes with loose sheets can cause uncontrollable flight behavior for short and long lines and are therefore not suitable.
- With unloaded lines, avoid descending at airspeeds above  $V_y$ , and keep positive load factors (above 0.5 g). Maintain visual control on your line (mirror or equivalent).
- Use only bags or nets in a good condition, and reinforce them with strong straps, if necessary. Do not take off with an empty bag or net.
- Brief systematically with ground team and task specialists before conducting the operation.
- When using long lines, assistance of a person on the ground (task specialists) equipped with a radio to communicate with the pilot, is highly recommended.
- Stop the operation when reaching marginal fuel content.
- Always depart vertically with your line / load to avoid entanglements.
- On LAMA helicopters, comply with the pitch limits. Check for correct calibration. If components other than Airbus Helicopters components (blades, etc.) are installed, check the control rigging and use only the permitted corresponding pitch settings.
- On LAMA and ALOUETTE helicopters, pay attention to the electrical sling release device installed on the cyclic stick, which is a device to also move the hoist up/down. Its design can lead to inadvertent contact that can potentially result in its activation.

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### 1. Accidents reported over the last 10 years

AH Accidents repartition by main causes  
Aerial work\* mission - 2010-2019 period



\* Aerial work: Logging, Construction/sling load, firefighting, Geophysical/Seismic Survey...

### 2. Recommendations

#### a. External load

**Ballast slings.** An unloaded line is a potential hazard (tail rotor strike) and all lines should be adapted with ballast. The effect is obvious in stabilized flight. During descents at airspeeds above  $V_y$ , it is possible for the line to move upward, even with ballast, at reduced load factors (above 0.5g). This phenomenon can be prevented by conducting descents at airspeeds below  $V_y$ . Be aware of the line you use (steel or textile). Textile lines can fly very high towards tail rotor with high speed and can even get caught in the tail rotor or structural rear components (tail boom, horizontal stabilizer, tail fin, tail skid/damper, etc.).

**Note:**

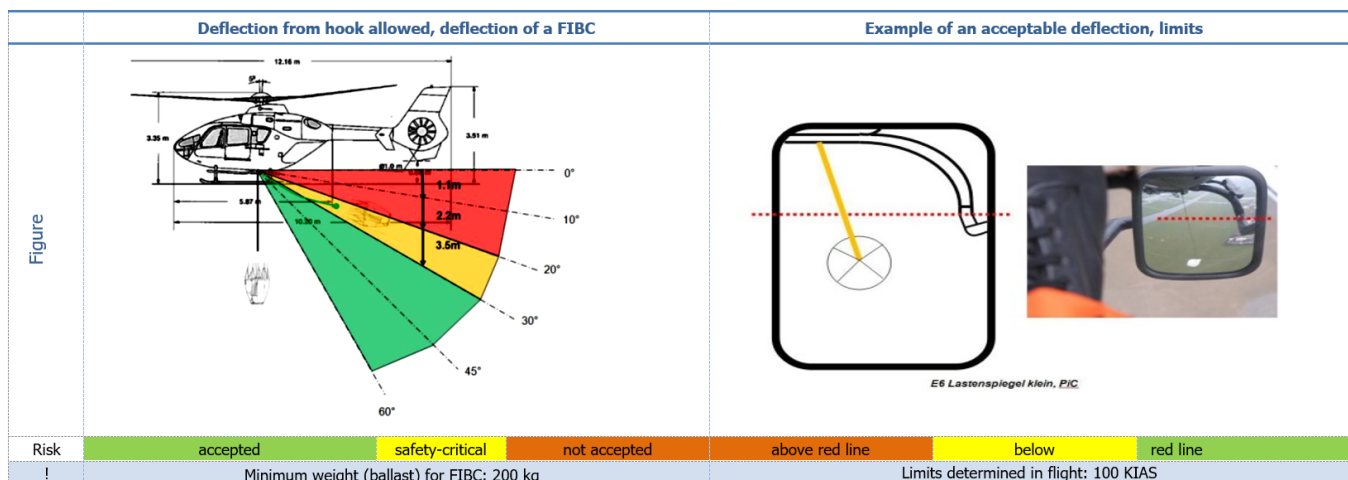
Whenever possible, land the line in front of the helicopter so that the line is visible and under the pilot's control. In any case, it is highly recommended to fit a swivel bottom on the rope.

If this is not possible, take particular care of the textile line as it can more easily get caught in the tail rotor and structural rear components due to its characteristics.

Please also note that wire ropes can form standing loops when put down and thus endanger the tail rotor.

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#### Method for determining an appropriate flight speed / sink rate (Example for FIBC):



FIBC: Flexible Intermediate Bulk Container

Source of graph and data: Armasuisse, 2013 with kind permission

**Failure of a bag** can prove to be dangerous given the significant aerodynamic drag to which the empty bag is exposed. Even with no load factor, the line and bag can move upward toward the tail rotor. You must use very solid bags which are in a good condition, reinforced with solid straps, if necessary. Another alternative will be to use a net to transport the bag or another bag in good condition.

#### Note:

Some bags are for single usage only and it is difficult for the crew to get this information.

Consideration should be given to the use of nets rather than bags if the load allows this alternative.

#### b. Collisions

Airbus Helicopters notices that collision with cables or antennas in the vicinity of the sling area or collision of the main or tail rotor with obstacles represent a significant part of the accidents during external sling load operations.

A proper recognition of the area before performing the approach is therefore highly recommended.

Some of the collisions with obstacles during the lifting are also caused by a lack of situation awareness, the left side of the aircraft being "forgotten" by the pilot seated in the right seat.

If possible, use a line (short or long) that allows the helicopter to be above the highest obstacle.

#### c. Environment/Weather related

Weather conditions can change very rapidly, particularly in mountainous areas. A particular focus should be placed on these parameters during the flight preparation, and a GO/NO GO decision should be made with the ground team before the flight. Do not hesitate to abort an operation when reaching marginal weather conditions such as stormy weather.

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The actual Environmental Conditions can change rapidly and differ from what was forecasted and used for the calculations. This is what makes the difference between the real performance and the calculated performance.

#### d. Operations

**Sling Work is often carried out with a relatively low fuel state (with a remaining fuel quantity of less than 10%).** LAMA helicopters are fitted with a very-low-fuel-level option.

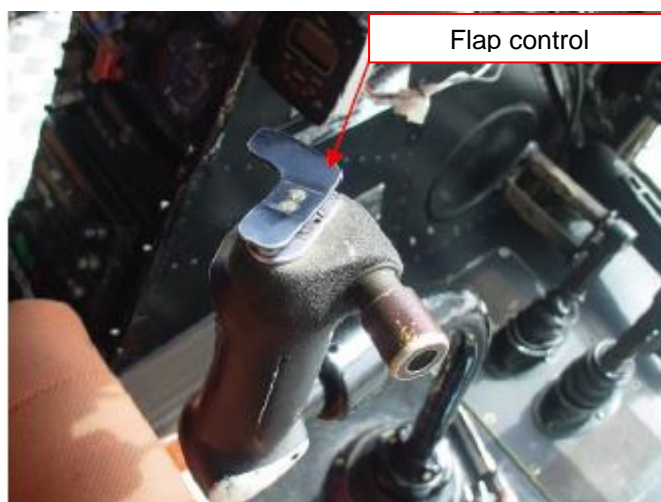
This option is not available on AS350 helicopters. For helicopter versions up to version B2 inclusive, when the fuel probe indicator has reached "0", there are only 2 minutes of flying left, and when the fuel pressure drops to zero, there are only 10 seconds left, until engine flame-out occurs.

On H125 and H130 helicopters, these 10 seconds are reduced to zero. Due to the shape of the tanks and the technology of the fuel probes installed on H125 helicopters, the equipment proves to be accurate since capacitance probes were introduced to service in 1992. However, be more careful with resistance probes. Get used to checking that the indications are consistent with the partial top-ups, and do not wait until there are only a few liters of fuel left.

This technical information is provided to help identifying imminent fuel starvation condition. A safe fuel management should always prevent reaching this state of fuel.

Stopping the operation is highly recommended when the low level fuel warning comes on.

On LAMA and ALOUETTE helicopters, the pilot must pay attention to the electrical sling release device (flap control) installed on the cyclic stick, which is a device to also move the hoist up/down. Its design can lead to inadvertent contact that can potentially result in its activation.



#### e. Human Factors

This is maybe the most difficult cause to address. Airbus Helicopters noticed that accidents can occur due to a lack of coordination and a lack of communication between the aircrew and the ground team: task specialist, bystanders or any third parties can be injured by debris projected by the rotor downwash, by the movement of the load when lifting or caught in the net or the load, as some examples have shown.

Airbus Helicopters reminds operators that it is absolutely necessary to brief the operation with the whole team, to review the sequence of operations, to check the radio-communication (use and frequency) and to brief how to react in case of emergency.

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**Attempts to take off with the line caught on the ground can be prevented** if a person, in radio-contact (or eye contact) with the pilot, monitors the operation from the ground. This is vital when the cargo hook is not clearly visible either directly or in the mirror. In addition, it is recommended to avoid aggressive take-offs, and to start with a vertical climb before transition to level flight. The pilot should thus become aware of a snag because of restricted climbing capability.

#### f. Maintenance

Aircraft preparation or maintenance is a cause of accidents. A properly maintained and airworthy aircraft is mandatory to perform a safe and reliable flight.

#### g. Suitability of flight operations equipment, operator competence and expert knowledge

##### Choice and sourcing of equipment

The choice (procurement) of suitable lifting accessories and slinging equipment, their correct use and the adoption of appropriate techniques for the slinging of loads are fundamental safety criteria for helicopter external sling load operations (HESLO).

The operation of helicopters is subject to particular requirements and involves special risks; therefore, it is crucial that operators apply expert knowledge regarding the suitability and correct use of lifting accessories and slinging equipment.

In the EASA area, Operators are responsible for the sourcing of suitable lifting accessories and slinging equipment as well as for maintaining their serviceability. See ED Decision 2014/018/R, Annex VIII Part-SPO, AMC1 SPO.SPEC.HESLO.100 (c)(3)

The operator must confirm, with assistance as needed from the manufacturers or distributors, that the equipment meets the requirements of the operation.

All lifting accessories and slinging equipment must be state of the art and in conformity with requirements. Instructions for use and maintenance (user guide) are an integral part of the product.

##### Training and occupational safety

All task specialists involved in the handling of lifting gear must be familiar with the appropriate use of such equipment including any special operational requirements. Operators must develop and maintain programs for Maintenance and serviceability inspections for the equipment and training programs for individuals involved in operations and maintenance.

Maintenance procedures and permissible repairs must only be carried out by qualified persons (trained by the equipment manufacturer).

In the EASA area, the legal framework for initial and recurrent training is ED Decision 2014/018/R, Annex VIII Part-SPO, AMC1 SPO.SPEC.HESLO.100

Each user should comply with national law on occupational safety.

EU: *Directive 2009/104/EC concerning the minimum safety and health requirements for the use of work equipment by workers at work.*

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#### Manufacturer/distributor

All manufacturers and/or distributors (retailers) must have expert knowledge of the particular requirements and risks to which lifting accessories and slinging equipment are exposed during helicopter external sling load operations. During the development, design and construction phase as well as when supplying equipment, the manufacturers/distributors must guarantee the suitability and the safe use of the equipment.

Special attention must be paid to the choice of raw material and specific calculations (service strength, minimum breaking load, service life and life span in general). Compared to normal industrial use, the equipment employed during helicopter operations must be able to withstand different forces (such as bank angle, G-force, drag, shock loads, angles of inclination, downwash but also wear due to UV rays or heavy workload). All these factors must therefore be considered.

In Europe, EC Machinery Directive 2006/42/EC is the standard for the manufacture of "lifting accessories" (art. 1.d, art. 2.d) (ropes, traverses), as well as "slings and their components" (art. 2.d) (round slings, lifting straps, slinging chains, multiple-leg slings, shackles, etc.).

Manufacturers should not rely on the assumption that safety factors 4 (steel), 5 (steel ropes) or 7 (textiles, see Machinery Directive 2006/42/EC, annex I, art. 4.1.2.5) are sufficient for the particular operational and material requirements of helicopter external load operations.

**Note:** The safety factors given in Machinery Directive 2006/42/EC, annex I, art. 4.1.2.5, are only reference values and the actual values may therefore be higher. It is the manufacturers' duty to assess the actual requirements together with their customers and subsequently define the factors actually needed. The specifications for a sling which will only be used to transport a specific machine (and nothing else), for example, cannot be compared to the requirements of a Logging Long Line.

#### Links

- [EC 2009/104/EC](#)
- [EC 2006/42/EC](#)
- [EASA Part SPO](#)
- [EASA CS-27](#)
- [EASA CS-29](#)

#### Miscellaneous publications

- Marshaller Syllabus, FOCA 1996 (FH-SY):
  - [In English](#)
  - [In German](#)
  - [In French](#)
  - [In Italian](#)
- "Nine vital rules for ground personnel in helicopter maneuvering area", SUVA 2014 :
  - [In German](#)
  - [In French](#)
  - [In Italian](#)



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- “Safe operations of helicopters during aerial work”, DGUV Information: 214/911:  
[In English](#)  
[In German](#)

Airbus Helicopters thanks Patrick Fauchère, Air Glaciers Flight Ops Manager and Enrico Ragoni, CEO at AirWork & Heliseilerei GmbH (A&H) for their wise support to issue this Safety Information Notice.

**Appendix:** Quick User Guide (Source from Airwork & Heliseilerei GmbH. With kind permission)



## Quick User Guide – AWA part 4.0

References: MD 2006/42/EC | WMD 2009/104/EC | DGUV | 214-911 | EASA Annex VII | Part SPO/ HESLO

DE: Kurzanleitung für Installation, erste Inbetriebnahme und Anwendung – Details siehe AWA Teil 0 bis 4 – www.air-work.swiss/Documents | EN: Brief instructions for installation, initial start-up and application - for details see AWA part 0 to 4 - www.air-work.swiss/Documents | FR: Brèves instructions pour l'installation, la première mise en service et l'application - pour plus de détails, voir AWA parties 0 à 4 - www.air-work.swiss/Documents | IT: Brevi istruzioni per l'installazione, l'avvio iniziale e l'applicazione - per i dettagli vedere AWA parte da 0 a 4 - www.air-work.swiss/Documents | SK: Stručný návod na inštaláciu, prvé uvedenie do prevádzky a použítie - podrobnosti nájdete v časti AWA časť 0 až 4 - www.air-work.swiss/Documents | PT: Breves instruções de instalação, inicialização inicial e aplicação - para obter detalhes, consulte as partes 0 a 4 da AWA - www.air-work.swiss/Documents | DK: Kort vejledning til installation, initial start og anvendelse - for detaljer se AWA del 0 til 4 - www.air-work.swiss/Documents | FI: Lyhyt asennus- ja käyttöohje - ja sovellusohjeet - katso lisä tietoja AWA osista 0-4 - www.air-work.swiss/Documents | NO: Korte instruksjoner for installasjon, første oppstart og påføring - for detaljer se AWA del 0 til 4 - www.air-work.swiss/Documents | SV: Kort instruktioner för installation, initial start och applikation - för detaljer se AWA del 0 till 4 - www.air-work.swiss/Documents | SK: Stručný návod na inštaláciu, prvé uvedenie do prevádzky a použítie - podrobnosti nájdete v časti AWA časť 0 až 4 - www.air-work.swiss/Documents | ALB: Udhëzime të shkurtër për instalimin, fillimin fillestar dhe aplikimin - për detaje shihni pjesën AWA 0 nga 4 - www.air-work.swiss/Documents | PL: Krótka instrukcja montażu, pierwszego uruchomienia i aplikacji - szczegółowe informacje - patrz AWA część 0-4 - www.air-work.swiss/Documents | HR: Kratka uputstva za instalaciju, početno pokretanje i primjenu - za detalje pogledajte AWA, dio 0 do 4 - www.air-work.swiss/Documents | BG: Кратки инструкции за инсталиране, първоначално пускане и приложение - за подробности вижте AWA част 0 до 4 - www.air-work.swiss/Documents | ZH: 安装、初次启动和应用的简要说明 有关详细信息，请参考AWA第0至4部分 www.air-work.swiss/Documents | JP: インストール、初期起動、およびアプリケーションの簡単な説明 詳細については、AWA 1-4の各章を参照してください www.air-work.swiss/Documents | GR: Συνοπτικές οδηγίες εγκατάστασης, αρχικής εκκίνησης και εφαρμογής - για λεπτομέρειες βλ. AWA μέρος 0 έως 4 - www.air-work.swiss/Documents | [2020-07-01]

DOC AWA\_LAM\_QUG\_T4\_A | FC 200701ER | LM -- | AirWork & Heliseilerei GmbH (A&H) | Bahnhofweg 1 | CH-6405 Immensee | FON +41 41 420 48 84 | e-mail office@air-work.com | www.air-work.swiss

### Basic functions

HELICOPTER EXT. SLING LOAD OPERATION	<input type="checkbox"/> MANUAL HANDLING - SWIVEL	<input type="checkbox"/> ELECTRIC RELEASE - SWIVEL	<input type="checkbox"/> ELECTRIC RELEASE WITHOUT SWIVEL

### Standard Operation (intended use)

<input type="checkbox"/> HESLO 1 – 2 – 3	<input type="checkbox"/> HESLO 3 LOGGING	<input type="checkbox"/> HESLO 4	<input type="checkbox"/> OTHER

### Check before first install and first use

WLL LOAD LIFTING DEVICE ≥ WLL HELI	DIMENSIONS FITTING TO HOOK ?	GAP HOOK TO GROUND ?	ELECTRICAL CONSUMPTION AND INTERFACE ?

### Check before use

FUNCTION TEST – LOCKED & ROTATE ?	FUNCTION TEST – RELEASE & ROTATES ?	ADDITIONAL EQUIPMENT ?	LIFE TIME – EXPIRY DATE ?

Please note that these pictograms do not in any way represent all possible options and that in no case all options can be represented. Therefore, avoid similar situations that deviate from appropriate use.

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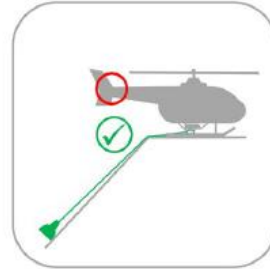
#### Best practice



WORKING LOAD LIMIT > LIFTING CAPACITY



MASS REMOTE > MASS LINE



EQUIPMENT DEEP IN THE AREA

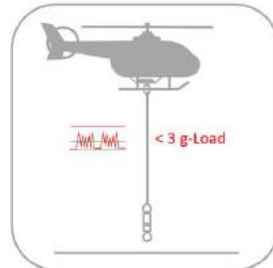


EQUIPMENT IN FRONT OF VIEW

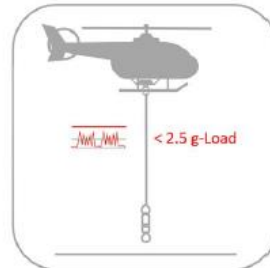
#### Limitations



LOGGING OR OTHER HARD SHOCK LOADS



STANDARD ENGAGEMENTS



LIMITED USE - LOW ENGAGEMENTS



GENERAL AND SPECIFIC LIMITS

#### Dangerous situations on ground



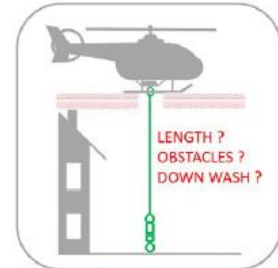
HAZARD - TAIL ROTOR VERSUS LINE LOOPS



HAZARD - DOWN WASH AND TAIL ROTOR

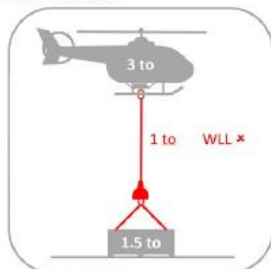


HAZARD - FLAIR LANDING OVER LINES

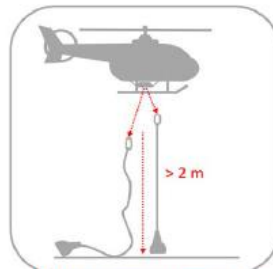


LINE LENGTH > OBSTACLES

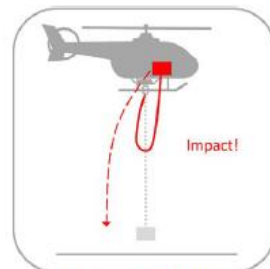
#### Forbidden



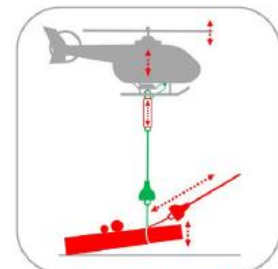
WLL EQUIPMENT < LOAD MASS



RELEASE AND DROP EQUIPMENT > 2 m



THROWING ATTACHED LOADS



TUG - DRAG - PULL - TEAR

#### Not least: legal basics



CE - KONFORMITY MD 2006/42/EC



CORRECT AND READABLE LABELING



READ AND TRAIN INSTRUCTIONS



CONFORMITY - RELIABILITY - SAFETY

Find more information in our AWA parts 0 to 4 on our website [www.air-work.swiss/Documents](http://www.air-work.swiss/Documents).